# Reduction of slips, trips and falls in fishing by using new anti-slipping boots

**Olaf C. Jensen**
**Lise Hedegaard Laursen**
**Fabienne Knudsen**

**Center of Maritime Health and Safety,Esbjerg**

**The project was funded by the Financial Instrument for Fisheries Guidance of the European Union and by the Danish Ministry of Food, Agriculture and Fisheries (FIUF)**


Norway
Denmark

## Problem

- Fishing is a high risk occupation
- Slips, trips and falls are frequent
- Low interest for footwear and the deck coating
- Anti-slipping boots and deck-coating is supposed important
- Lack of intervention studies of the evidence

## Objectives

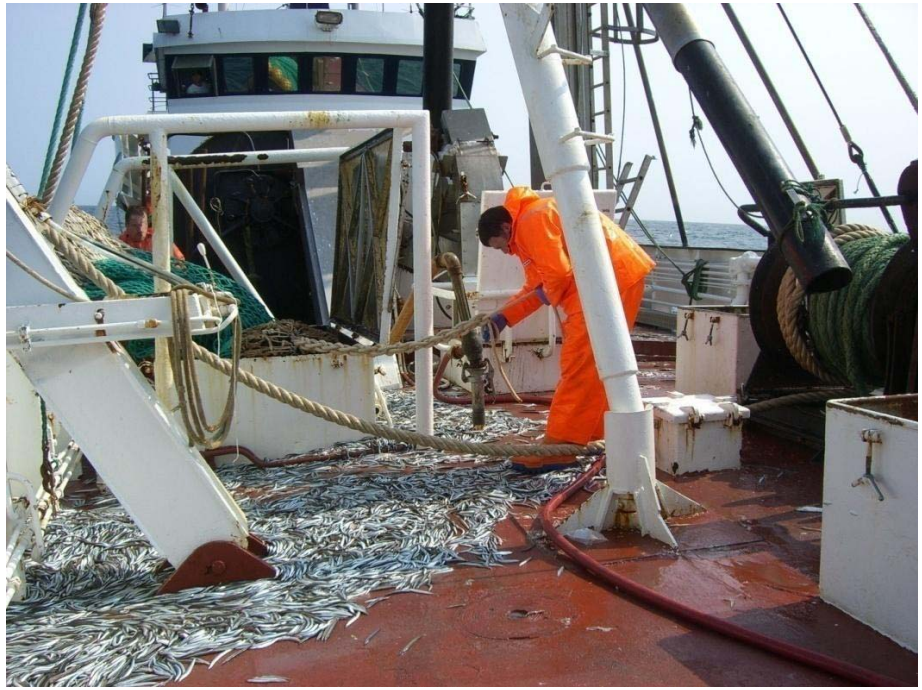
- Intervention study of the effect of anti-slipping boots:
- Comfort of footwear?
- Slips, trips and falls reduction?

## Project plan

- 2004 Project start
- 2006 Datacollection
- 2007 Data analysis and report
- 2008 Publication

## Study population

- The study population n= 161 fishermen
- 16 of these are Norwegian fishermen
- 57 vessels in all



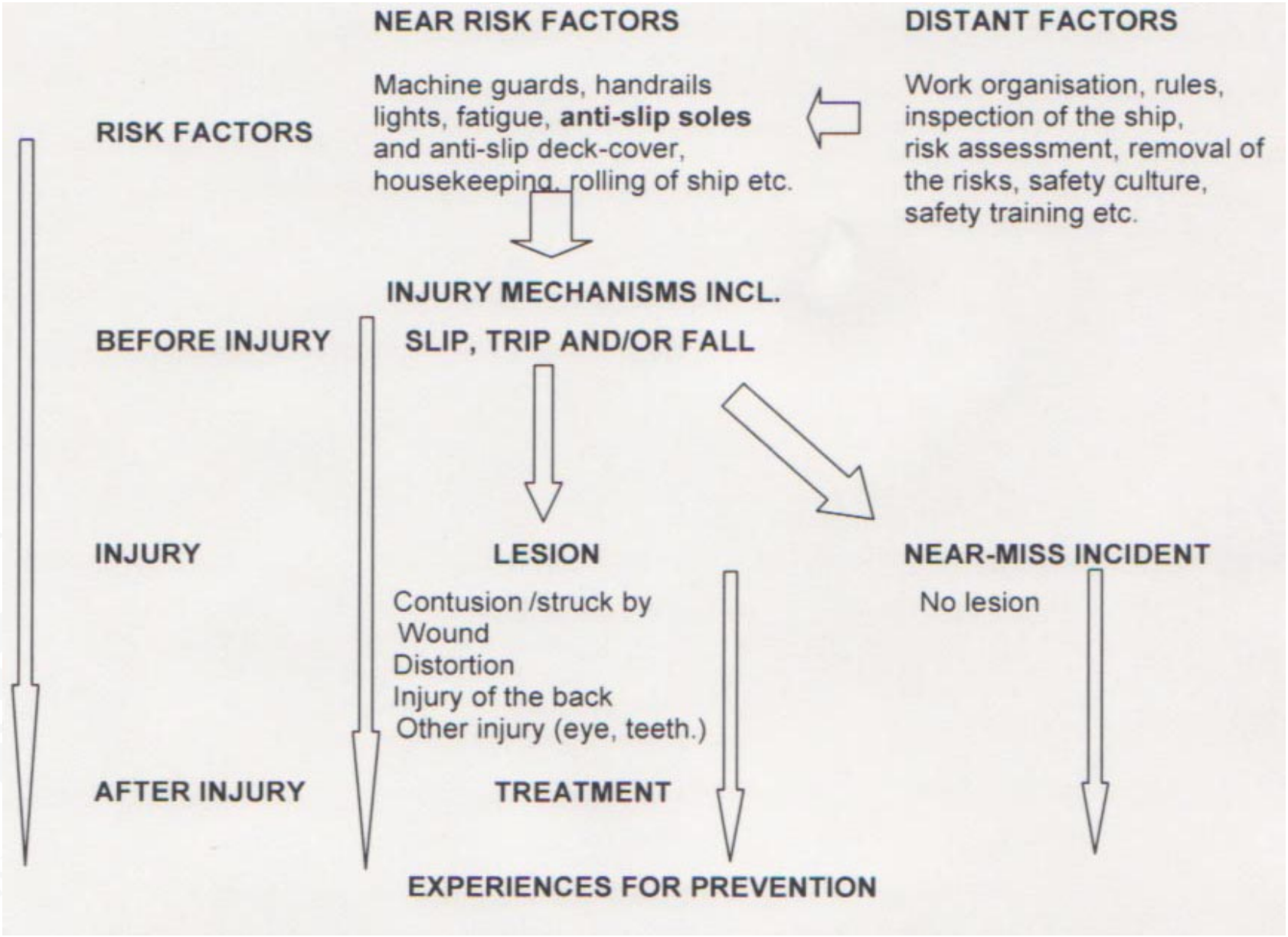
## Methods

- Measurements before and after
- Baseline questionnaire about the old boots
- Intervention: new safety boots for free
- Using new boots on several fishing trips
- Questionnaire-2 about the new boots

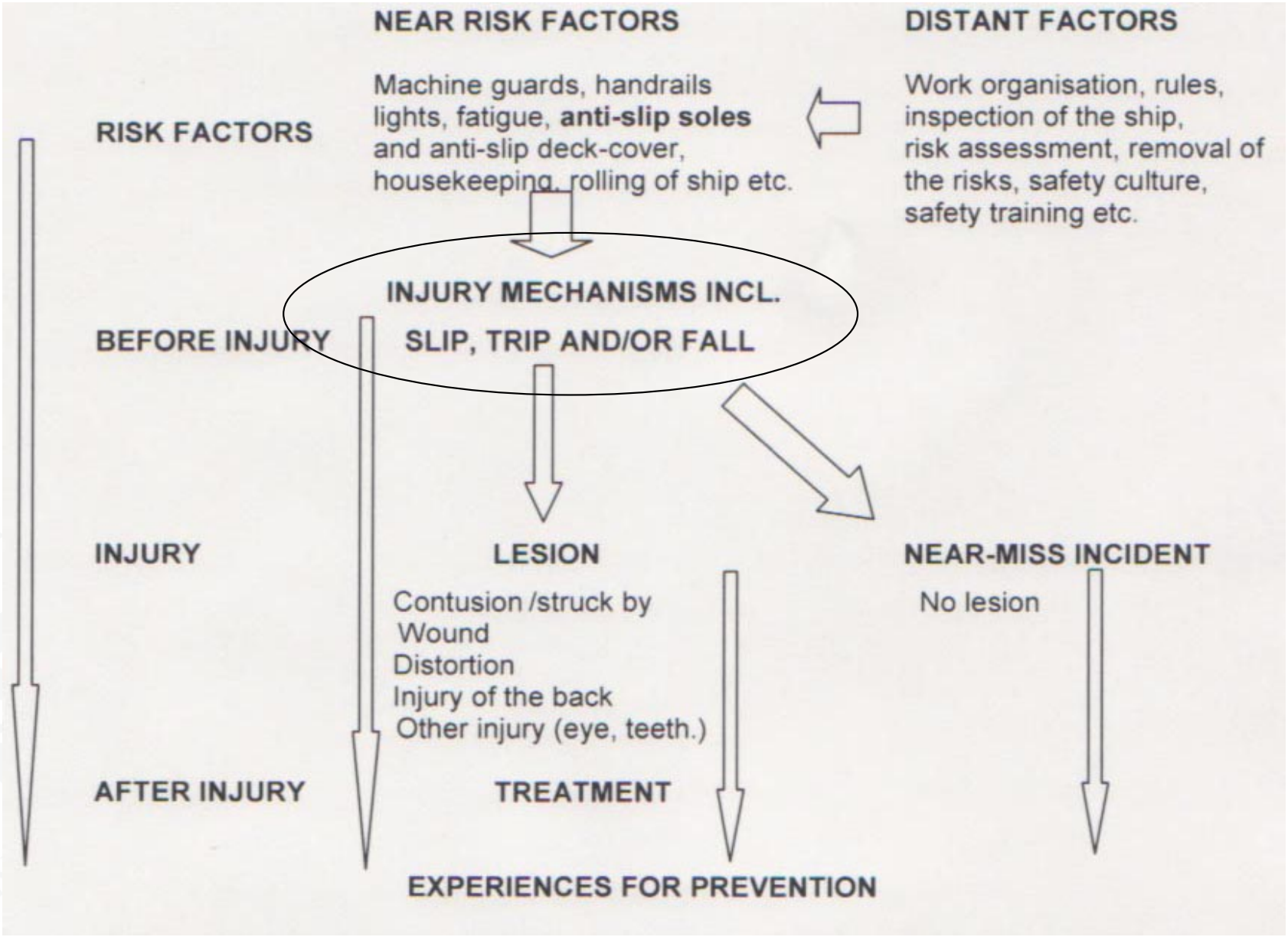
## Analysis

- Prevalences analyzed in the cohort
- Causal analyses of the incidents as a case-control study
- Odds ratios and
- Differences of proportions to estimate the effect
- 95%-confidence intervals

# The injury model



# The injury model



## Definitions of effect variables

- A Near-miss happens without personal damage but might have been an injury, if the things were sligtly different
- An injury is sudden and unexpected with personal damage
- Slips, trips and falls (STF) are not injuries, but..
- STF can be the initial incident (pre-event) leeding to an injury
- STF incident without an injury is a *near-miss incident*

## The intervention measure = new boots

- Steel toe
- Thermo isolated
- Anti-slipping soles rubber material

## Results

- 161 fishermen completed questionnaire-1
- 140 (87%) used the new boots and completed questionnaire-2
- Mean days at sea for each fisherman with new boots: 45 days
- The old boots had been used for 1-2 years

# Results:

Assessment of the impact of the risk factors for old boots (n=57) compared with the new boots (n=23)

| | YES | % of total | NO | % total | NA | % | Odds ratios |
|---|---|---|---|---|---|---|---|
| *Were slippery surfaces, fish ice.. a significant risk?* | | | | | | | 0.96 (.27- 3.1) |
| Old boots | 35 | *61% (51-72) | 17 | 30% (16-44) | 5 | 9 % | |
| New boots | 15 | 65% (49-81) | 7 | 30% ( 8-53) | 1 | 4 % | |
| *Did you slipped, tripped or fell or nearly doing that?* | | | | | | | 4.9 (1.08-22.8) |
| Old boots | 42 | 74% (65-82) | 5 | 9% ( 0-25) | 10 | 18 % | |
| New boots | 12 | 52% (34-71) | 7 | 30% ( 8-53) | 4 | 17 % | |
| *Did slippery soles had any impact as a risk factor ?* | | | | | | | 13.1 (2.5-15.0) |
| Old boots | 31 | 54% (43-66) | 20 | 35% (21-49) | 6 | 11 % | |
| New boots | 2 | 9% ( 0-34) | 17 | 74% (60-88) | 4 | 17 % | |
| *Was rolling of the ship an important risk factor* | | | | | | | 1.3 (0.41-3.8) |
| Old boots | 33 | 58% (47-69) | 20 | 35% (21-49) | 4 | 7 % | |
| New boots | 13 | 57% (39-74) | 10 | 44% (23-64) | 0 | 0 % | |

## Results:

- STF were reduced by 22 % (p=0.052) with the new boots
- Incidents with slippery soles were reduced by 46 % (p < 0.00)
- STF were pre-events in 9 of 11 (82 %) injury cases

## Results:

- The new boots were assessed as “much better” or ”something better” by having a firm grip and a feeling of standing firmly by 93%
- The comfort of the new boots in general and their ability to reduce the fatigue on the back and the legs was assessed as ”much better” or ”better” by 84% and 72% respectively
- Information to the fishermen when buying new boots and different models of the boots available in the stores is needed

## Implications for the prevention (proposals):

- Use of safety boots with anti-slipping soles can improve safety and comfort in fishing
- Guidance on safety footwear at fishermen's own stores and at safety courses can promote the use of safety-boots
- By including the footwear in the risk-assessments of the fishing vessels the safety can be improved
- Information about STF as a pre-event in the injury reports to the Maritime Authorities and Insurance, can improve safety

## Final conclusions:

- The study provides evidence that STF and incidents with slippery soles can be reduced by use of the new boots
- As these incidents are often pre-events of injuries, it is expected that the risk of injuries will also be reduced.
- The new boots adds better comfort and less fatigue to the back and legs

**Thank You**